

CLAIM AMENDMENTS:

1-5. (canceled).

6. (currently amended) A semiconductor device of a double diffused MOS structure employing a silicon carbide semiconductor substrate, the device comprising:

a silicon carbide semiconductor epitaxial layer provided on a surface of the silicon carbide semiconductor substrate and having a first conductivity which is the same conductivity as the silicon carbide semiconductor substrate;

an impurity region formed by doping a surface portion of the silicon carbide semiconductor epitaxial layer with an impurity of a second conductivity, the impurity region having a profile such that a near surface thereof has a relatively low second-conductivity impurity concentration and a deep portion thereof has a relatively high second-conductivity impurity concentration, wherein a second-conductivity impurity concentration in an outermost surface portion of the impurity region is controlled to be lower than a first-conductivity impurity concentration in the silicon carbide semiconductor epitaxial layer;

a further impurity region by doping a surface portion of the impurity region of the second conductivity with an impurity of the first conductivity; and

a channel region having the first conductivity formed in the outmost surface portion between the epitaxial layer and the further impurity region of the first conductivity, an impurity concentration of the first conductivity in the channel region is lower than the second-conductivity impurity concentration in the deep portion of the impurity region of the second conductivity.

7. (currently amended) A semiconductor device manufacturing method for manufacturing a semiconductor device of a double diffused MOS structure employing a silicon carbide semiconductor substrate, the method comprising steps of:

forming a silicon carbide semiconductor epitaxial layer having a first conductivity on a surface of the silicon carbide semiconductor substrate, the first conductivity being the same conductivity as the silicon carbide semiconductor substrate; and

doping a surface portion of the silicon carbide semiconductor epitaxial layer with an impurity of a second conductivity to form an impurity region having a profile such that a near surface thereof has a relatively low second-conductivity impurity concentration and a deep portion thereof has a relatively high second-conductivity impurity concentration,

wherein the surface portion of the silicon carbide semiconductor epitaxial layer is doped with the impurity of the second conductivity by single-step ion implantation in the impurity region forming step, the single-step ion implantation being performed with a single constant level of implantation energy, and

wherein a first-conductivity impurity concentration in the epitaxial layer is higher than a second-conductivity impurity concentration in an outermost surface portion of the impurity region, so as to form a channel region having the first conductivity in the outermost surface portion of the impurity region, and

wherein an impurity concentration of the first conductivity in the channel region is lower than the second-conductivity impurity concentration in the deep portion of the impurity region of the second conductivity.

8. (new) The device of claim 6, wherein the further impurity region is spaced apart from peripheral edges of the impurity region of the second conductivity, such that side surfaces of the further impurity region come in contact with and are covered with the impurity region of the second conductivity.

9. (new) The device of claim 6, wherein the channel region is disposed between the epitaxial layer and the further impurity region of the first conductivity, such that one side surface of the channel region comes in contact with the epitaxial layer and the other side surface of the channel region comes in contact with the further impurity region of the first conductivity.

10. (new) The device of claim 6, wherein the deep portion of the impurity region includes a portion that is disposed directly under the further impurity region.

11. (new) The method of claim 7, wherein the first-conductivity impurity concentration in the silicon carbide semiconductor epitaxial layer is constant, and the constant first-conductivity impurity concentration in the epitaxial layer is higher than the second-conductivity impurity concentration in an outermost surface portion of the impurity region.

12. (new) The method of claim 7, further comprising a step of doping a surface portion of the impurity region of the second conductivity with an impurity of the first conductivity to form a further impurity region,

wherein the further impurity region is spaced apart from peripheral edges of the impurity region of the second conductivity, such that side surfaces of the further impurity region come in contact with and is covered by the impurity region of the second conductivity.

13. (new) The method of claim 12, wherein the deep portion of the impurity region includes a portion that is disposed directly under the further impurity region.